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ALEXANDRIA, VA 22314-1176

EXAMINER
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COMLEY, ALEXANDER BRYANT

ART UNIT	PAPER NUMBER
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3746

MAIL DATE	DELIVERY MODE
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10/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,602	<b>Applicant(s)</b> VAN PRAAG ET AL.	
	<b>Examiner</b> ALEXANDER B. COMLEY	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Status of the Claims**

1. The Examiner acknowledges receipt of Applicant's amendments, arguments, and remarks filed with the Office on June 12<sup>th</sup>, 2008 in response to Non-Final Office Action mailed by the Office on December 14<sup>th</sup>, 2007. Per Applicant's response, Claims 1-6 (all claims) have been amended. The Examiner has carefully considered all amendments, arguments, and remarks, and they will be addressed below.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 3** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant's use of the word "its" is indefinite, as it fails to specifically define which structural feature it refers to (i.e. inlet valve, stem, or duct).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

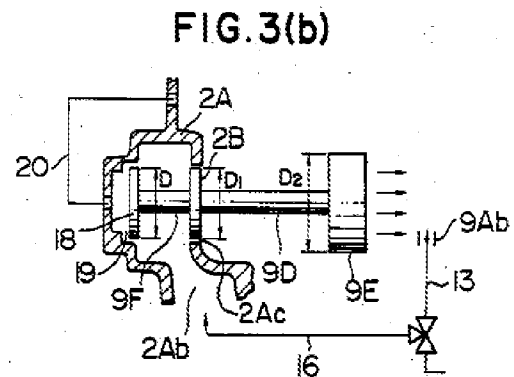
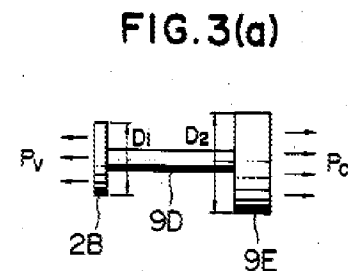
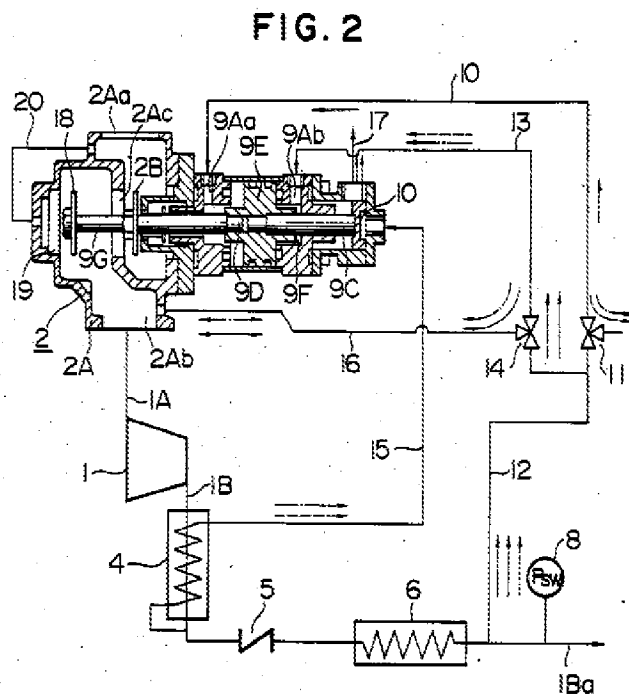
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 1-2, 4, & 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,708,599 to Suzuki in view of United Kingdom Patent Application Publication No. GB 2,133,585 to Ott.



In regards to Independent **Claim 1**, and with particular reference to Figures 2, 3a, and 3b shown immediately above, **Suzuki (4,708,599)** discloses:

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A compressor, containing a compressor element (1), and comprising a rotor chamber connected to an inlet pipe (1A) and an outlet pipe (1B); a reservoir in communication with the outlet pipe (1B); a pressure regulating system including an inlet valve (2) associated with the inlet pipe (1A); a piston (2B, 18) connected to the inlet valve (2) and which is movable in a cylinder (9F) to open and close the inlet valve (2) without the use of a spring acting on the piston (2B, 18); wherein the piston (2B, 18) is a double-acting piston which divides the cylinder (9F) into first (9Fa) and second (9Fb) closed cylinder chambers....the first cylinder chamber (9Fa), on a first side of the piston (2B, 18) facing away from the inlet valve (2), is connected to a part of the rotor chamber located near the inlet valve (2) via a first pipe (15), wherein the connection is always open; and on a second side of the piston (2B, 18), the second cylinder chamber (9Fb) is connected to a part of the rotor chamber situated near the inlet valve (2) and to the non-return valve (5) via a second pipe (1A)

As shown in the figures above, Suzuki discloses a rotary compressor system that is designed to smoothly and surely operate a suction valve of a compressor inlet without the use of a spring acting upon the valve member (i.e. piston). In particular, Suzuki first states "In another type of rotary compressor apparatus, on the contrary, the suction throttle valve means is always urged by a spring to be closed. In this type of rotary compressor apparatus, the compressor is started at no load, however, it takes a long time to open the suction throttle valve means against the urging spring. It has been proposed to provide a separate pressure source for the suction throttle valve means.

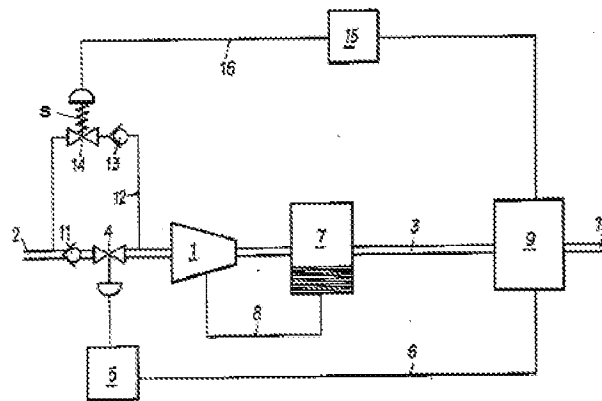
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However, this proposal would render the construction complex and increase costs because the separate pressure source requires an additional control unit therefore.”

(Column 1, Lines 39-49) Suzuki goes on to state “Another object is to provide a rotary compressor apparatus able to accomplish the above functions without a separate source of pressure for the suction throttle valve means.” (Column 1, Lines 58-61)

Suzuki’s device therefore utilizes a double-acting piston (2B, 18) to provide proper loading and unloading conditions for the compressor (See Column 5, Line 32 - Column 7, Line 26) Also, Suzuki’s piston divides the cylinder into two separate closed cylinders. In particular, Suzuki states “The cylinder 9A incorporates therein a gas release valve element 9B for opening and closing the gas release opening 9Ac, a rod 9C provided at one end thereof with the valve element 9B, a rod 9D provided at one end thereof with the valve element 2B and an unloader piston 9E dividing a working chamber 9F into two chamber sections 9Fa and 9Fb. The other ends of the rods 9C and 9D are connected to the opposite ends of the piston 9E, respectively. The piston 9E is closely fitted to and movable within the cylinder 9A.” (Column 2, Lines 38-48) Lastly, Suzuki’s device utilizes an always-open (i.e. no valving) first pipe 15 that connects one of the chambers to the rotor chamber, as well as a second pipe 1A that connects the opposing chamber to the rotor chamber (See Figure 2). However, although Suzuki discloses the majority of Applicant’s claimed invention, it fails to substantially and specifically disclose Applicant’s bridge setup.

FIG. 1



As seen in Figure 1 immediately above, UK Patent Application Publication to **Ott (GB 2,133,585)** teaches the remaining elements of Independent Claim 1 by disclosing a bridge bridging the inlet valve, a gas stream limiter, and a gas pipe. In particular, Ott discloses:

A bridge (12) bridging said inlet valve (4) and in which, between the inlet pipe (2) and the rotor chamber (1), are successively mounted a gas stream limiter (11) and a non-return valve (13) which only admits gas into the rotor chamber (1); a gas pipe (16) connecting the reservoir (9) to a part of the bridge (12) situated between the gas stream limiter (11) and the non-return valve (13); and a relief valve (14) associated with said gas pipe (16)

As can be seen in Figure 1 immediately above, Ott discloses an arrangement for controlling the loading and unloading of a screw compressor that is very similar to the system seen in Suzuki. Ott, however, further describes the piping arrangements and valve placements of the system that Suzuki fails to disclose. In particular, Ott discloses the use of a bypass line 12 (i.e. bridge) with a bypass valve 14 (i.e. relief valve) in order to properly throttle the amount of gas conveyed by the compressor. Ott goes on to

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disclose "The throttle valve is by-passed by a by-pass line (12) with a by-pass valve (14), the passage cross-section of which can be adjusted in at least two stages, by means of a control device (15). For the starting process of the compressor (1), a larger passage cross-section can be opened and for idling, a smaller passage cross-section. In order to prevent the medium from flowing back through the by-pass line (12) against the suction direction, a check valve (13) is installed into the by-pass line (12)." (Abstract)

Both of the above references deal with controlling the capacity and/or flow of the lubricant (or gas) within a compressor system. Consequently, one of ordinary skill in the art desiring more precise compressor control could have easily modified the piston of inlet valve of Suzuki with the bridge setup found in Ott in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art of compressor capacity controls to modify the inlet valve setup of Suzuki with the bridge setup Ott in order to obtain predictable results; those results being a more accurate compressor control system that provides reliable control of the inlet valve without the need for a spring.

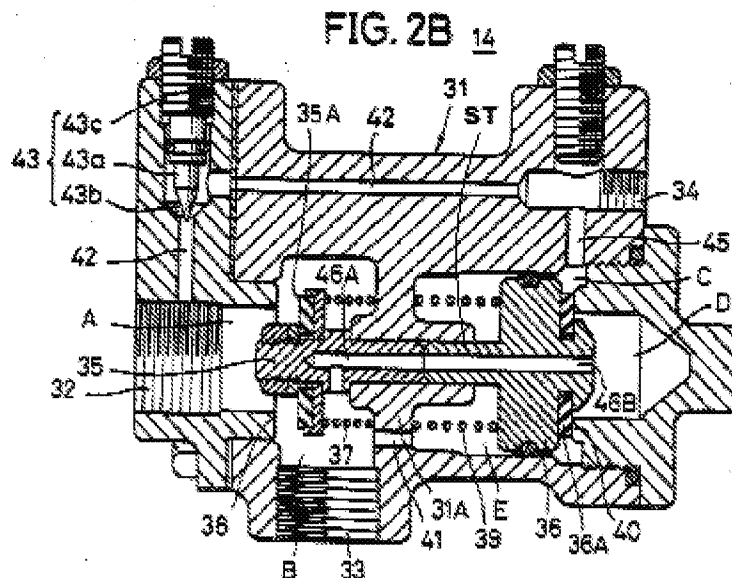
7. In regards to dependent **Claim 2**, the Suzuki portion of the combination clearly discloses a piping member 15 that connects one of the chambers (2Fa) to the rotor chamber. Regarding dependent **Claim 4**, Suzuki further discloses the use of a gas-regulated (i.e. pneumatic) valve 14 that contains a spring and is directly connected to the reservoir 9 and control valve 15 by a pipe 16 (See Column 3, Lines 1-7) In regards to dependent **Claim 6**, and it can be seen in the Suzuki reference above that the inlet



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valve casing 2A forms a common housing with the piston cylinder. Therefore, to one of ordinary skill desiring a more accurately controlled compressor system, it would have been obvious to utilize the techniques disclosed in the Suzuki in combination with those seen in Ott in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Suzuki with the piping/valving setup of Ott in order to obtain predictable results; those results being more accurate compressor control.

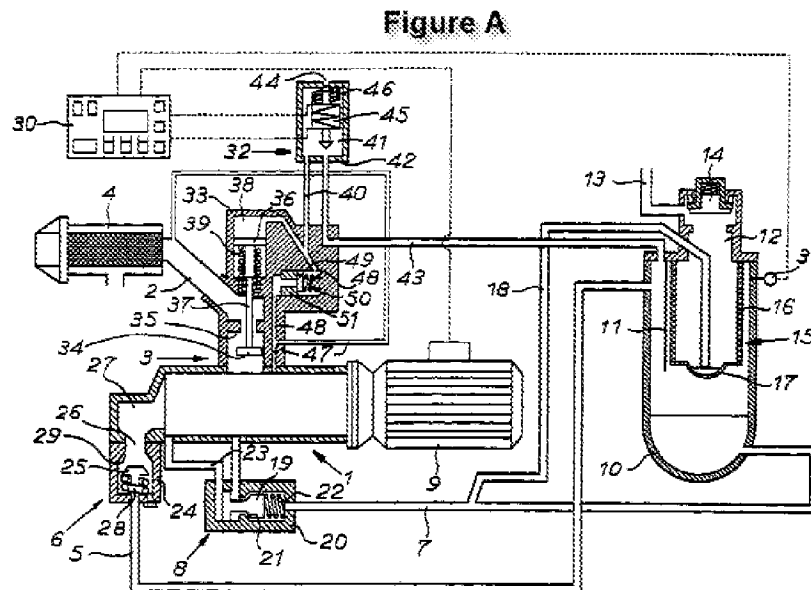
8. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,708,599 to Suzuki in view of United Kingdom Patent Application Publication No. GB 2,133,585 to Ott as applied to claims 1-2, 4, & 6 above, and further in view of United States Patent No. 4,406,589 to Tsuchida et al. directed to a Compressor.



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As shown in Figure 2B above, Tsuchida discloses a valve assembly comprising a duct provided throughout the length of the piston stem. In particular, Tsuchida discloses, "Relief passages 46A and 46B are respectively formed in the check valve 35 and the main valve 36, along the axial direction thereof." (Column 5, Lines 5-7) One of ordinary skill in the art of compressors could have easily utilized the stem duct of Tsuchida in combination with the valve of the Suzuki-Ott combination in order to obtain predictable results. Therefore, it would have been obvious to one of ordinary skill in the art of compressor capacity controls to modify the piston setup of the Suzuki-Ott combination with the stem-and-duct setup disclosed by Tsuchida in order to obtain predictable results; those results being a simplified connection between the piston and the inlet valve.

9. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,708,599 to Suzuki in view of United Kingdom Patent Application Publication No. GB 2,133,585 to Ott, and in further view of Belgium Patent Document No. BE 1,012,655 to Coppens.



As shown in Figure A immediately above, the Coppens portion of the combination specifically discloses the specific use of electromagnetics for the control valve 32. It would have been obvious to one of skill in the art to utilize the techniques disclosed in the Suzuki-Ott combination in combination with those seen in the Coppens reference in order to obtain predictable results. One of ordinary skill in the art at the time of the invention could have easily applied the electromagnetic valving techniques of Coppens to the control valve of Ott in order to obtain predictable results; those results being a more reliable and better-controlled compressor system.

### ***Response to Arguments***

10. Applicant's arguments with respect to Claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/  
Examiner, Art Unit 3746

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

ABC